

IN THE CLAIMS:

Please cancel claim 11 without prejudice or disclaimer as to the subject matter contained therein. Please amend claims 1-10 and add new claims 12-13 as follows. A marked-up version of the amended claims showing the revisions thereto is attached.

1. (Amended) A compound layered type of sensing device, comprising:

a plurality of solid electrolyte plates; and

B5 a plurality of pairs of electrodes, wherein ^{of each pair are} [each pair of] electrodes [is] disposed [respectively on surfaces of] ^{or} one of the plurality of solid electrolyte plates, forming first to third electrochemical cells, wherein a gas to be measured is pre-processed under oxygen pumping carried out by the first electrochemical cell, a concentration of a particular gas component of the gas to be measured being detected by the second electrochemical cell and a difference in electromotive force between the gas to be measured and a reference gas being detected by the third electrochemical cell,

wherein a single pair of electrodes of the third electrochemical cell is disposed on the same surface of one of the plurality of solid electrolyte plates, and the first and third electrochemical cells are located on mutually different solid electrolyte plates of the plurality of solid electrolyte plates.

2. (Amended) The sensing device of claim 1, further comprising first and second chambers formed in the device, the gas to be measured being introduced into the first and second chambers, and a fourth electrochemical cell configured to detect a

concentration of oxygen of the gas to be measured present in at least one of the first and second chambers.

3. (Amended) The sensing device of claim 2, wherein the first chamber is formed to communicate with an outside of the device via a first diffusive resistance passage and the second chamber is formed to communicate with the first chamber via a second diffusive resistance passage, wherein

one of the two electrodes of the first electrochemical cell is located to be exposed to the first chamber so that the first electrochemical cell permits a given amount of oxygen to be introduced into or from the first chamber correspondingly to an amount of voltage applied to the first electrochemical cell, and

one of the two electrodes of the second electrochemical cell is located to be exposed to the second chamber so that applying a given amount of voltage to the electrodes of the second electrochemical cell permits the second electromechanical cell to detect current corresponding to the concentration of a particular gas component of the gas to be measured.

4. (Amended) The sensing device of claim 3, further comprising a plurality of reference gas chambers formed in the device,

wherein one of the two electrodes of the second electrochemical cell and one of the two electrodes of the fourth electrochemical cell are located to be exposed to the same reference gas chamber of the plurality of reference gas chambers and the other

of the two electrodes of the second electrochemical cell and the other of the two electrodes of the fourth electrochemical cell are located to be exposed to either one of the first or second chambers, respectively.

5. (Amended) The sensing device of claim 4, wherein one of the two electrodes of the first electrochemical cell and one of the two electrodes of the third electrochemical cell are located to be exposed to mutually different reference gas chambers of the plurality of reference gas chambers.

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Cont'd 6. (Amended) The sensing device of claim 2, further comprising a plurality of reference gas chambers formed in the device,

wherein one of the two electrodes of the second electrochemical cell and one of the two electrodes of the fourth electrochemical cell are located to be exposed to the same reference gas chamber of the plurality of reference gas chambers and the other of the two electrodes of the second electrochemical cell and the other of the two electrodes of the fourth electrochemical cell are located to be exposed to either one of the first or second chambers, respectively.

7. (Amended) The sensing device of claim 6, wherein one of the two electrodes of the first electrochemical cell and one of the two electrodes of the third electrochemical cell are located to be exposed to mutually different reference gas chambers of the plurality of reference gas chambers.

8. (Amended) The sensing device of claim 3, further comprising a plurality
~~of reference gas chambers formed in the device,~~

wherein one of the two electrodes of the first electrochemical cell and one
of the two electrodes of the third electrochemical cell are located to be exposed to
mutually different reference gas chambers of the plurality of reference gas chambers.

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Cont'd 9. (Amended) The sensing device of claim 2, further comprising a plurality
of reference gas chambers formed in the device,

wherein one of the two electrodes of the first electrochemical cell and one
of the two electrodes of the third electrochemical cell are located to be exposed to
mutually different reference gas chambers of the plurality of reference gas chambers.

10. (Amended) The sensing device of claim 1, wherein a plate comprising
alumina is placed between the first and second electrochemical cells so that both the first
and second cells are insulated to each other.

Please add new claims 12 and 13 as follows:

B6 --12. (New) A compound layered type sensing device, comprising:
first and second solid electrolyte plates;

first and second chambers, each formed between the first and second solid electrolyte plates, into which a gas to be measured is introduced respectively, the first chamber being connected to an outside of the device via a first diffusive resistance passage and the second chamber being connected to the first chamber via a second diffusive resistance passage;

first and second reference gas chambers into which a reference gas is introduced respectively, the first reference gas chamber being formed on one side of the first solid electrolyte plate opposite to the first and second chambers, and the second reference gas chamber being formed on one side of the second solid electrolyte plate opposite to the first and second chambers;

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a first pair of electrodes comprising a pumping electrode and a reference pumping electrode to form a first electrochemical cell together with the second solid electrolyte plate, wherein the pumping electrode is located on the second solid electrolyte plate to be exposed to the first chamber and the reference pumping electrode is located to be exposed to the second reference gas chamber, whereby the first electrochemical cell pumps oxygen corresponding to an amount of voltage applied to the electrodes of the first electrochemical cell;

a second pair of electrodes comprising a sensing electrode and a reference sensing electrode to form a second electrochemical cell together with the first solid electrolyte plate, wherein the sensing electrode is located on the first solid electrolyte plate to be exposed to the second chamber and the reference sensing electrode is located to be exposed to the first reference gas chamber, whereby the second electrochemical cell